CURRENT IMAGE — 12

REFERENCE FRAME — 14

MACRO BLOCK 20

26. LOCAL MOTION VECTOR

22

16 Global motion vectors

PREVIOUS IMAGE

28

18

FIG. 1
(PRIOR ART)

32 34 34 34

30 →

Picture Header	MB	MB	... ...	MB

34 →

MB Mode	Inter MV's (if not COPY) or Intra prediction's	Coeff's (if any)

36

38

39

Figure 2
(Prior Art)

42 44 46 4Y 48

40→

Picture Header	GMVC_flag (if INTER)	GMV's (if GMVC on)	MB	MB	… …	MB

48→

MB Mode (GMVC)	Inter MV's (if not GMVC modes) or intra prediction's	Coeff's (if any)

50 52 54

Figure 3

Table 1. Codeword number of GMVC_flag

code number	GMVC_flag	comment
0	0	GMVC off
1	1	GMVC on

FIG. 4

Table 2. Codeword number of MB modes

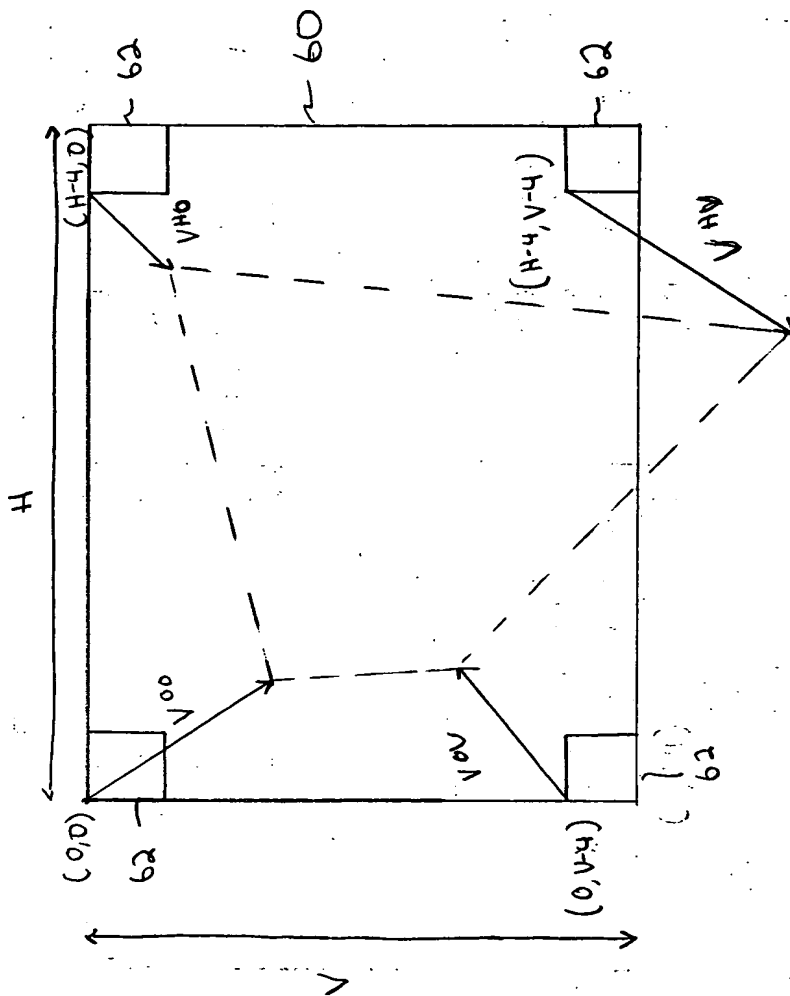| code number	GMVC off	GMVC on	comment
x	COPY	GMVC_COPY	GMVC modes
0	16x16	GMVC_16	
1	16x8	16x16	non-GMVC modes
2	8x16	16x8	
3	8x8	8x16	
4	8x4	8x8	
5	4x8	8x4	
6	4x4	4x8	
7	Intra 4x4	4x4	
8	0, 0, 0	Intra 4x4	
... ...	... ...	... ...	

FIG. 5

FIG. 6

Reference Frame

84

82

Y+Vy

X+Vx

80

$V(x,y) = GMV\ C(x,y)$

$\vec{V}^{HD}$

70

72

$\vec{V}^{HV}$

70

Current Image frame

$\vec{V}^{00}$

70

Y — 78

V(x,y)

80

74

X

76
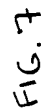
70

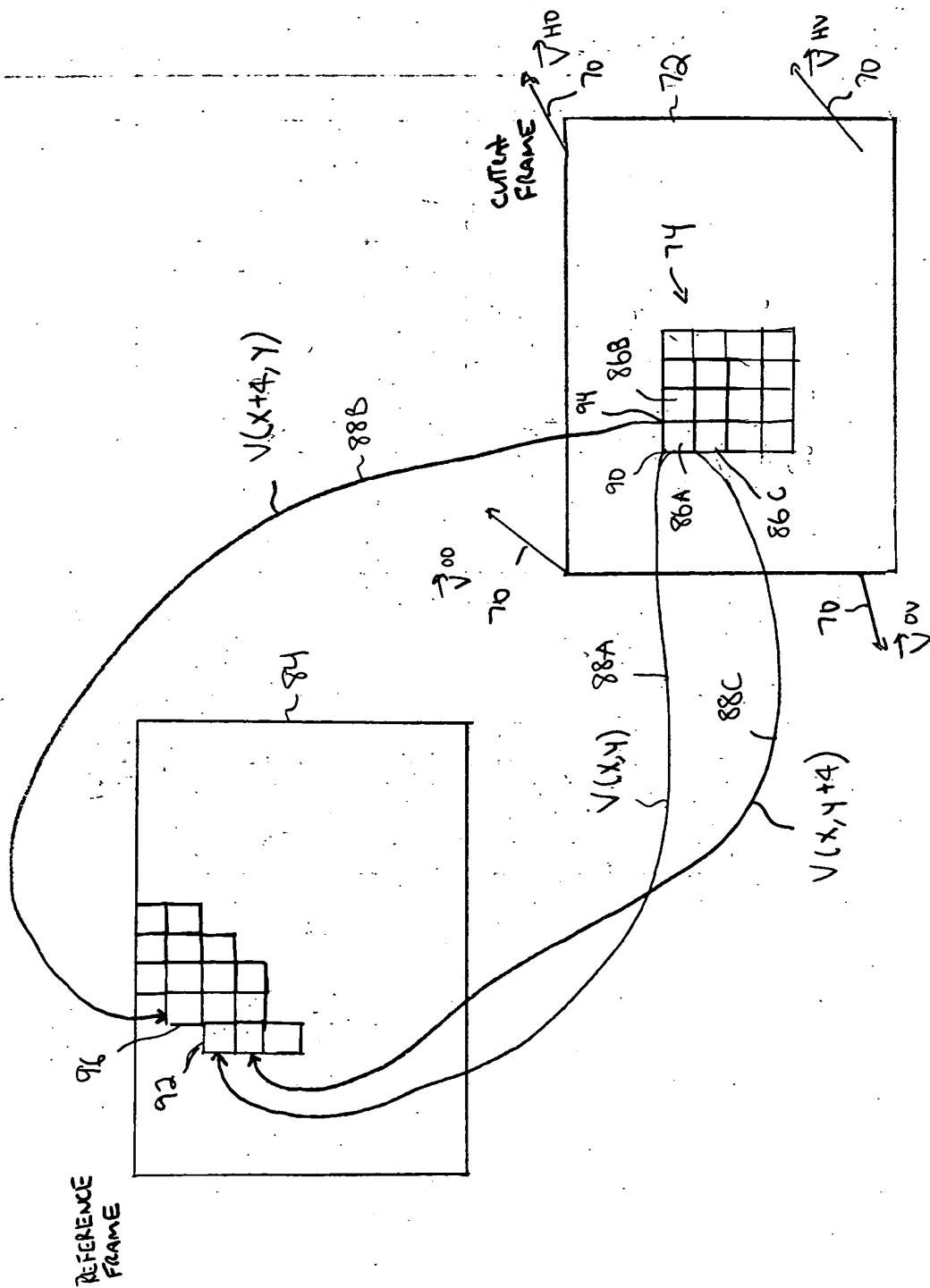$\vec{V}^{0V}$
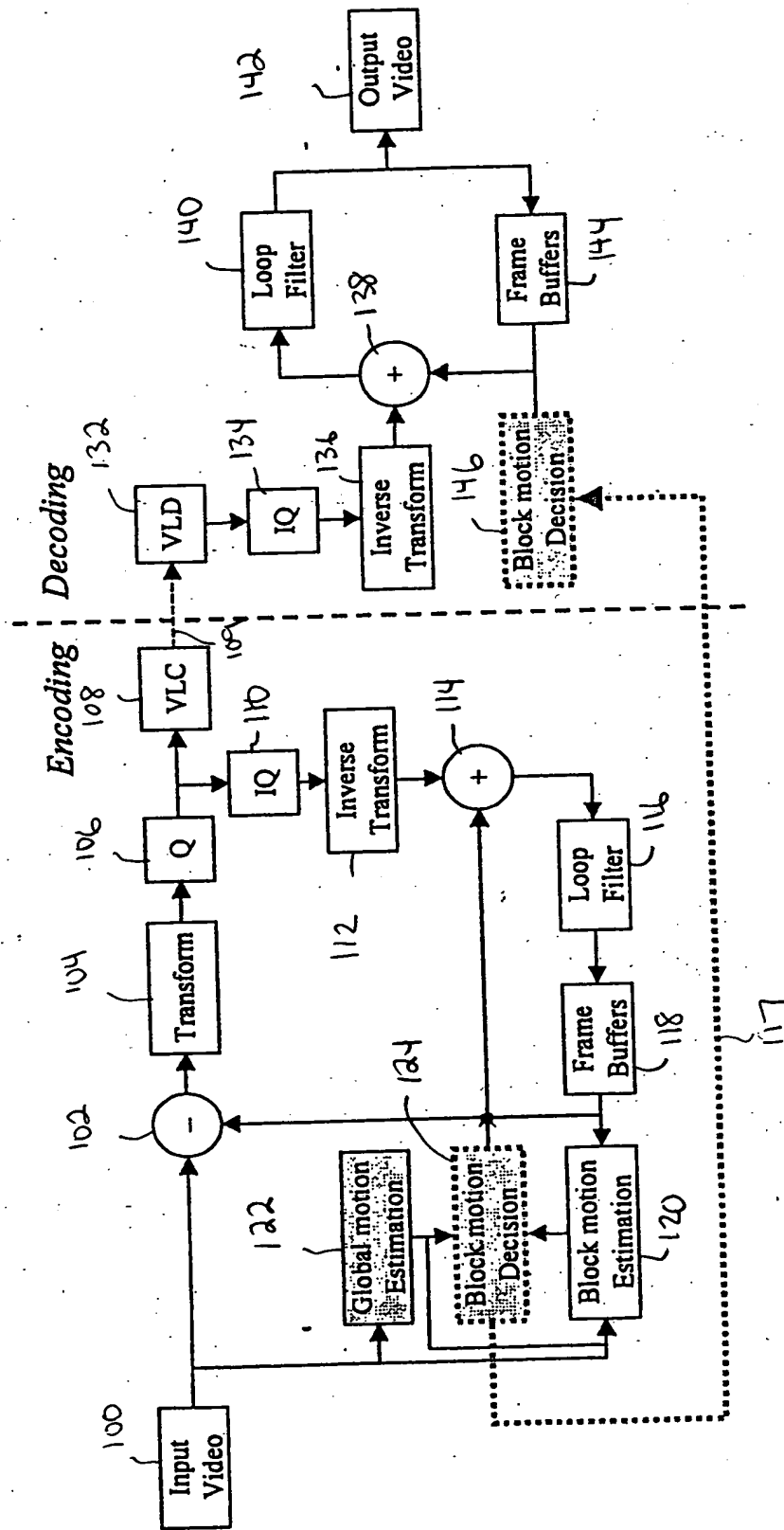
FIG. 7

Fig. 8

130

69

Encoding / Decoding

F16. 9

sequences	number of frames	QP	PSNR(Y) (TML8)	bitrate (TML8)	PSNR(Y) (GMVC)	bitrate (GMVC)	GMVC average bitsavings (avsnr)	GMVC average dB gain (avsnr)
container_qcif	100	16	36.012	26841	36.072	26973	0.41%	0.017
	100	20	33.315	14686	33.374	14982		
	100	24	30.496	8872	30.625	8992		
	100	28	27.72	5501	27.89	5546		
news_qcif	100	16	36.748	50387	36.771	50306	0.32%	0.019
	100	20	33.773	30616	33.807	30610		
	100	24	30.807	18393	30.878	18571		
	100	28	27.912	11138	27.92	11217		
foreman_qcif	100	16	36.03	77341	36.015	76953	3.75%	0.197
	100	20	33.312	47049	33.254	45815		
	100	24	30.759	29654	30.691	27729		
	100	28	28.123	19002	27.987	16829		
silent_qcif	150	16	35.799	62703	35.803	62584	1.54%	0.075
	150	20	33.067	36789	33.105	36700		
	150	24	30.446	21462	30.528	21341		
	150	28	27.94	12389	28.027	12325		
paris_cif	150	16	35.607	350219	35.627	348976	0.73%	0.037
	150	20	32.541	202010	32.576	201485		
	150	24	29.636	112599	29.65	112559		
	150	28	26.719	63113	26.754	62710		
mobile_cif	300	16	34.009	1658660	33.986	1657004	0.64%	0.028
	300	20	30.738	838637	30.684	833798		
	300	24	27.817	423358	27.672	406809		
	300	28	25.093	252598	24.839	226740		
tempete_cif	260	16	34.95	1275478	34.945	1276031	1.29%	0.053
	260	20	31.931	625722	31.887	619544		
	260	24	29.217	313318	29.134	301817		
	260	28	26.557	176451	26.472	162093		
coast_cif	300	16	34.36	1289113	34.341	1265484	8.23%	0.28
	300	20	31.491	649562	31.457	616242		
	300	24	28.874	307248	28.854	270744		
	300	28	26.548	144230	26.606	116146		
average							2.11%	0.08825

FIG. 10. Comparison of TML-8 and the proposed GMVC